TEST REPORT

REPORT NO.: CTNT230621022R

Product name: Car Fridge

Model No.: EF12

Applicant: ZHEJIANG OULUN ELECTRIC CO., LTD.

Test procedure: Entrustment Test

Shenzhen Zhongwei Testing Technology Co.,Ltd.

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TEST REPORT

Commission Regulation (EU) 2019/2019 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council

Commission Delegated Regulation (EU) 2019/2016 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances

Report Number.....:	CTNT230621022R
Date of issue.....:	Jul.07,2023
Laboratory Name.....:	Shenzhen Zhongwei Testing Technology Co.,Ltd.
Testing location/ address.....:	Room 1A106, 1/F., No.109, Lijia Road, Henggang, Henggang Street, Longgang District, Shenzhen, Guangdong, China
Tested by(Test Engineer) .....:	Oliver Long
Reviewed By(Supervisor).....:	Airan Lu
Approved by(Chief Engineer).....:	Flight Lee
Applicant's name.....:	ZHEJIANG OULUN ELECTRIC CO., LTD.
Address.....:	No.17, Tangmei Road, Economic Development Zone, Yuhang District, Hangzhou, 311100 Zhejiang
Manufacturer name.....:	ZHEJIANG OULUN ELECTRIC CO., LTD.
Address.....:	No.17, Tangmei Road, Economic Development Zone, Yuhang District, Hangzhou, 311100 Zhejiang
Factory name.....:	ZHEJIANG OULUN ELECTRIC CO., LTD.
Address.....:	No.17, Tangmei Road, Economic Development Zone, Yuhang District, Hangzhou, 311100 Zhejiang
Test specification:	
Standard..... :	Commission Regulation (EU) 2019/2019 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council. Commission Delegated Regulation (EU) 2019/2016 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances
Test time..... :	Jun.22-30,2023

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General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Other important notes:

1. If you have any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receipt of the report.

2. Entrusting test only responsible for the incoming samples, and the test results are used by the entrusting party to understand the quality of the samples.

3. This test report is invalid without the "test stamp".

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5. Test items with "*" are subcontracted items.

6. The remaining samples under test must be collected within three months of receipt of the inspection report. If the samples are not collected within the time limit, the laboratory will handle them by selves.

Company name: Shenzhen Zhongwei Testing Technology Co., Ltd.
Address: Room 1A106, 1/F., No.109, Lijia Road, Henggang, Henggang Street, Longgang District, Shenzhen, Guangdong, China

Tel: 086-755-28680489

Email: admin@ctnt-cert.com

Website: www.ctnt-cert.com

General product information:

This product is a Car Fridge.

Test item description.....:	Car Fridge
Trade Mark.....:	N/A
Manufacturer.....:	ZHEJIANG OULUN ELECTRIC CO., LTD.
Model/Type reference.....:	EF12
Ratings.....:	12V/24V⎓ 3.75A/1.875A, 45W (Powered by external driver Input:100-240V~ 50/60Hz, Output: 14.5V⎓ 4.1A)

Possible test case verdicts:

- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)

Climatic class:

☒SN ☒N ☒ST ☒T

Declared data for light source:

Rated Voltage/Frequency……:	12V/24V⎓ 3.75A/1.875A, 45W (Powered by external driver Input:100-240V~ 50/60Hz, Output: 14.5V⎓ 4.1A)
Rated power ……..…….....….(W):	45
Capacity…....…..……..…(L):	12L
Energy consumption…….. (kWh/24h):	N/A
Freezing capacity ……...(kg/24h):	N/A
Airborneacoustical noise emission…...…....dB(A):	N/A
Energy Efficiency Index…….…….…....(%):	N/A

Attachments:

- Samples photo

Summary of testing:

According to COMMISSION REGULATION (EU) 2019/2016 of 11 March 2019. The energy efficiency class of this product is D.

The Car Fridge meets the requirements of according to the implementation measure No. EU 2019/2019.

Generalremarks：

The test results presented in this report relate only to the object tested.
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"(see appended table)" refers to a table appended to the report.
Throughout this report a comma (point) is used as the decimal separator.

Remark:

Test Report Form No.……..…….....:	EC_2019/2019
Version……...:	1.0

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(EU) No 2019/2019&(EU) No 2019/2016			
Clause	Requirement - Test	Result - Remark	Verdict
1	**Energy efficiency requirements:**		P
(a)	From 1 March 2021, the energy efficiency index (EEI) of refrigerating appliances shall not be above the values as set out in Table 1.	EEI =55.18%	P
	From 1 March 2024, the EEI of refrigerating appliances shall not be above the values set out in Table 2.		N/A
2	**Functional requirements:**		P
	From 1 March 2021, refrigerating appliances shall meet the following requirements:		P
(a)	Any fast freeze facility, or any similar function achieved through modification of the temperature settings in freezer compartments, shall, once activated by the end-user according to the manufacturer's, the importer's or authorised representative's instructions, automatically revert to the previous normal storage conditions after no more than 72 hours.		P
(b)	Winter settings shall be automatically activated or de-activated according to the need to maintain the frozen compartment(s) at the correct temperature		N/A
	Until 1 March 2024, the requirements laid down in points 2(a) and (b) shall not apply to combi appliances with one electromechanical thermostat and one compressor which are not equipped with an electronic control board.		N/A
(c)	Each compartment shall be marked with the appropriate identification symbol. For the frozen compartments this shall be the number of stars of the compartment. For the chill and unfrozen compartments, this shall be an indication, chosen by the manufacturer, the importer or authorised representative, of the type of food that should be stored in the compartment.		N/A
(d)	If the refrigerating appliance contains vacuum insulation panels, the refrigerating appliance shall be labelled with the letters 'VIP' in a clearly visible and readable way.		N/A
(e)	For 2-star sub-compartments or 2-star sections:		N/A
	— a 2-star sub-compartment or 2-star section is separated from the 3-star or 4-star volume by a partition, container, or similar construction;		N/A
	— the volume of the 2-star sub-compartment or 2-star section does not exceed 20 % of the total volume of the containing compartment.		N/A

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(EU) No 2019/2019&(EU) No 2019/2016			
Clause	Requirement - Test	Result - Remark	Verdict
(f)	For 4-star compartments, the specific freezing capacity shall be such that the freezing time to bring the temperature of the light load (3,5 kg/100 l) from +25 to - 18 °C at an ambient temperature of 25 °C, is smaller than or equal to 18,5 h.		N/A
3	**Resource efficiency requirements:**		N/A
	From 1 March 2021, refrigerating appliances shall meet the followingrequirements:		N/A
(a)	Availability of spare parts:		N/A
(1)	manufacturers, importers or authorised representatives of refrigerating appliances shall make available to professional repairers at least the following spare parts: thermostats, temperature sensors, printed circuit boards and light sources, for a minimum period of seven years after placing the last unit of the model on the market;		N/A
(2)	manufacturers, importers or authorised representatives of refrigerating appliances shall make available to professional repairers and end-users at least the following spare parts: door handles, door hinges, trays and baskets for a minimum period of seven years and door gaskets for a minimum period of 10 year, after placing the last unit of the model on the market;		N/A
(3)	manufacturers shall ensure that these spare parts can be replaced with the use of commonly available tools and without permanent damage to the appliance;		N/A
(4)	the list of spare parts concerned by point (1) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts;		N/A
(5)	the list of spare parts concerned by point (2) and the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.		N/A
(b)	Access to repair and maintenance information:		N/A
	After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, and until the end of the period mentioned under (a), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:		N/A
(1)	the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers, importers or authorised representative may require the professional repairer to demonstrate that:		N/A

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(EU) No 2019/2019&(EU) No 2019/2016			
Clause	Requirement - Test	Result - Remark	Verdict
(i)	the professional repairer has the technical competence to repair refrigerating appliances and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;		N/A
(ii)	the professional repairer is covered by insurance covering liabilities resulting from its activity, regardless of whether this is required by the Member State;		N/A
(2)	the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request by the professional repairer;		N/A
(3)	manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information;		N/A
	Once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The available repair and maintenance information shall include:		N/A
	— the unequivocal appliance identification;		N/A
	— a disassembly map or exploded view;		N/A
	— list of necessary repair and test equipment;		N/A
	—component and diagnosis information (such as minimum and maximum theoretical values for measurements);		N/A
	— wiring and connection diagrams;		N/A
	— diagnostic fault and error codes (including manufacturer-specific codes, where applicable); and		N/A
	— data records of reported failure incidents stored on the refrigerating appliance (where applicable).		N/A
(c)	Maximum delivery time of spare parts:		N/A
(1)	during the period mentioned under point 3(a)(1) and point 3(a)(2), the manufacturer, importer or authorised representatives shall ensure the delivery of the spare parts for refrigerating appliances within 15 working days after having received the order;		N/A

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(EU) No 2019/2019&(EU) No 2019/2016			
Clause	Requirement - Test	Result - Remark	Verdict
(2)	in the case of spare parts available only to professional repairers this availability may be limited to professional repairers registered in accordance with point b.		N/A
(d)	Requirements for dismantling for material recovery and recycling while avoiding pollution:		
(1)	manufacturers, importers or authorised representatives shall ensure that refrigerating appliances are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed with the use of commonly available tools;		
(2)	manufacturers, importers and authorised representatives shall fulfil the obligations laid down in Point 1 of Article 15 of Directive 2012/19/EU.		
4	**Information requirements:**		P
	From 1 March 2021, instruction manuals for installers and end-users, and free access website of manufacturers, importers or authorised representatives shall include the following information:		P
(a)	the combination of drawers, baskets and shelves that result in the most efficient use of energy for the refrigerating appliance;		P
(b)	clear guidance about where and how to store foodstuffs in a refrigerating appliance for best preservation over the longest period, to avoid food waste;		P
(c)	the recommended setting of temperatures in each compartment for optimum food preservation. These settings shall not contradict the storage conditions set out in Annex III, Table 3;		P
(d)	an estimation of the impact of temperature settings on food waste;		N/A
(e)	a description of the effects of special modes and features, and in particular how temperatures are affected in each compartment and for how long;		N/A
(f)	for wine storage appliances: ‘this appliance is intended to be used exclusively for the storage of wine’. This shall not apply to refrigerating appliances that are not specifically designed for wine storage but may be used for this purpose, or to refrigerating appliances that have a wine storage compartment combined with any other compartment type;		N/A

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(EU) No 2019/2019&(EU) No 2019/2016			
Clause	Requirement - Test	Result - Remark	Verdict
(g)	instructions for the correct installation and end-user maintenance, including cleaning, of the refrigerating appliance;		P
(h)	for a freestanding appliance: 'this refrigerating appliance is not intended to be used as a built-in appliance';		P
(i)	for appliances without a 4-star compartment: 'this refrigerating appliance is not suitable for freezing foodstuffs';		N/A
(j)	access to professional repair, such as internet webpages, addresses, contact details;		N/A
(k)	relevant information for ordering spare parts, directly or through other channels provided by the manufacturer, importer or authorised representative;		N/A
(l)	the minimum period during which spare parts, necessary for the repair of the appliance, are available;		P
(m)	the minimum duration of the guarantee of the refrigerating appliance offered by the manufacturer, importer or authorised representative;		P
(n)	for refrigerating appliances with climate class:		P
	— extended temperate: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 10 °C to 32 °C';		P
	— temperate: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 16 °C to 32 °C';		P
	— subtropical: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 16 °C to 38 °C';		P
	— tropical: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 16 °C to 43 °C';		P
(o)	instruction on how to find the model information in the product database, as defined in Regulation (EU) 2019/2016 by means of a weblink that links to the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.		N/A

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Noise test					
Microphone Position	1	2	3	4	5
Airborne acoustical noise emission dB(A)	44.65	43.71	44.35	44.30	43.79
Average valuedB(A)	44.16				

Volume Measurement		
Compartment type	Unit	Value
Chill compartment	L	12

Measured steady-state results at ambient 16°C				
Test Point	Point 1 T_{SS}°C	Point 2 T_{SS}°C	Point 3 T_{SS}°C	Target Temperature
Chill	1.1°C	1.0°C	0.9°C	+2.00°C
Steady-state power W P_{SS}	7.32W			-

Measured steady-state results at ambient 32°C				
Test Point	Point 1 T_{SS}°C	Point 2 T_{SS}°C	Point 3 T_{SS}°C	Target Temperature
Chill	1.3°C	1.2°C	1.5°C	+2.00°C
Steady-state power W P_{SS}	10.21W			-

Compartment temperature and daily energy at ambient 16°C	
Formula	$E_T = 0{,}001 \times 24 \times (P_{ss} + \Delta E_{d\text{-}f} / t_{d\text{-}f})$
P_{ss}(W)	7.32W
$\Delta E_{d\text{-}f}$ (Wh)	-
$t_{d\text{-}f}$ (h)	-
E_{16} (kWh/24h)	0.176kWh/24h

Compartment temperature and daily energy at ambient 32°C	
Formula	$E_T = 0{,}001 \times 24 \times (P_{ss} + \Delta E_{d\text{-}f} / t_{d\text{-}f})$
P_{ss}(W)	10.21W
$\Delta E_{d\text{-}f}$ (Wh)	-
$t_{d\text{-}f}$ (h)	-
E_{32} (kWh/24h)	0.245kWh/24h

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Conclusion				
Item	Symbol	Unit	Tested	Verdict
Airborneacoustical noise emissions	-	dB(A)	44.16	-
Airborne acoustical noise emission class	-	-	D	-
The volume of theChill compartment	-	L	12	-
Daily energy consumption at 16 °C	E_{16}	kWh/24h	0.176	-
Incremental defrost and recovery energy consumption at 16 °C	$\Delta E_{d\text{-}f16}$	Wh	N/A	-
Defrost interval at 16 °C	$t_{d\text{-}f16}$	h	N/A	-
Daily energy consumption at 32 °C	E_{32}	kWh/24h	0.245	-
Incremental defrost and recovery energy consumption at 32 °C	$\Delta E_{d\text{-}f32}$	Wh	N/A	-
Defrost interval at 32 °C	$t_{d\text{-}f32}$	h	N/A	-
Daily energy consumption	E_{daily}	kWh/24h	0.211	-
Auxiliary energy	E_{aux}	kWh/a	N/A	
Load factor	L	-	1.0	-
Annual energy consumption	AE	kWh/a	77.02	-
parameters specific	C	-	1.00	-
	r_c	-	1.10	-
	N_c	-	138	-
	M_c	-	0.12	-
Compensation factors	A_c	-	1.00	-
	B_c	-	1.00	-
	D	-	1.00	-
Standard annual energy consumption	SAE	kWh/a	139.58	-
Energy Efficiency Index	EEI	%	55.18	-
Energy efficiency class	-	-	D	-
Maximum EEI starting from 1 March 2021	EEI	%	125	P

The calculation formula is as follows:

$AE = 365 \times E_{daily} / L + E_{aux}$

$E_{daily} = 0{,}5 \times (E_{16} + E_{32})$

$$SAE = C \times D \times \sum_{c=1}^{n} A_c \times B_c \times [V_c/V] \times (N_c + V \times r_c \times M_c)$$

$EEI = AE/SAE$

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Samples photo

Photo 1: Appearance

Photo 2: Appearance

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